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The porous space structure of domanik shales in the east of Russian plate

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Abstract

© SGEM2018. Because of the hydrocarbon reserves reducing from traditional reservoirs in Russia, much attention is paid now to unconventional resources, such as the Domanik oil shales of the Volga–Ural Basin. The Domanik deposits consist of siliceous-clay-carbonate rocks enriched with organic matter and other components of oil in the dispersed state. They are Middle Frasnian source rocks and have low porosity and permeability. Domanik shales contains many oil occurrences and rare fields, which is primarily explained by the absence of reservoirs. The increasing significance of shale oil and gas has led to the need for deeper understanding of Domanik porous space structure. The porous space of 5 samples from Domanik shales was researched using microCT and SEM. The absolute porosity of shale samples varies from 0.66 to 1.87. The pore size distribution differs depending on the composition of the rock: carbonate rich samples have less pores of 0.01 mm than organic rich ones. The pore size of the organic matter depends on the level of maturation. The authors propose a classification of pore space structure for the Domanik shales. The most important type for hydrocarbon exploration are the leaching cracks which related to carbonate rich shales.

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Keywords

Domanik, MicroCT, Porous space, Shale, Unconventional resources

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